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have assumed nearly their final positions with respect to the base of the heart, and the aperture of communication between the arterial infundibula is nearly closed up.

17. After the complete separation of the aortic and pulmonary infundibula from each other, the further changes in the semilunar valves consist principally in increase in size and diminution in thickness, so that they become more and more membranous, *pari passu*, with the growth of the other parts of the heart.

In the description given above of the division of the truncus arteriosus, it has been shown that the aperture in the septum of the ventricles does not close up entirely as is commonly supposed, but finally develops into the aortic infundibula.

The fifth vascular arch on each side gives off the branch to the lung of that side, and becomes ultimately the corresponding branch of the pulmonary artery, according to the view long ago propounded by Von Baer.

In conclusion I must thank several kind friends for assistance received from them during the preparation of this paper, which I here beg leave to acknowledge. In particular Dr. Beale, who has given me much valuable advice throughout; the Rev. George Kempson and my cousin Mr. Charles Paddison, who sent me abundant supplies of fresh eggs; and Dr. Cayley, who kindly revised the translations from the German authors referred to.

II. "On the Phenomena observed to attend the propulsion of Lymph from one of the Lymphatic Hearts into a Vein in the Frog." By THOMAS WHARTON JONES, F.R.S., Professor of Ophthalmic Medicine and Surgery in University College, &c. Received March 28, 1868.

(Abstract.)

An anæmic frog, killed, as regards sensation and voluntary motion, without stoppage of the circulation, by plunging into water at 110° or 120° Fahr., was laid open, and the posterior part of the anterior lymphatic heart of one side, in the niche behind and below the extremity of the large transverse process of the third vertebra, brought into view. By the removal of the skin of the back from over the scapular region, the part of the heart mentioned admitted of examination by transmitted light under a simple microscope—the lens $\frac{1}{2}$ -inch focus. It was seen that when the lymphatic heart contracted, a stream of lymph was propelled from it into a vein at its posterior border, and swept before it the blood in that vessel, whilst the flow from behind was arrested. As soon, however, as diastole of the lymphatic heart supervened, the flow of blood from behind became re-

established, and drove the lymph onward in its turn. Systole of the heart now again ensuing, the lymph-stream propelled into the vein swept forward the blood in that vessel as before, whilst the flow of blood from behind was arrested; and so the same series of phenomena was repeated.

It was thus seen that the phenomena attending the propulsion of lymph from the anterior lymphatic hearts of the frog into the veins at their posterior border, with which they communicate by a valvular opening, are essentially similar to those attending the propulsion of the lymph from the caudal heart of the eel into the caudal vein.

The vein at the posterior border of the heart, after receiving the lymph, turned behind the large transverse process of the third vertebra, and passed forwards along the inner to the anterior border of the heart, where it inoculated with the large blackish vein which runs up on the side of the neck.

This large blackish vein was described by Professor Johannes Müller as issuing from the heart; but the author has not found it to do so. It is merely in close connexion, so that it is dragged backwards by communication of the movement of the heart in contracting, and recoils forwards into its previous position when diastole takes place.

III. "Researches on Solar Physics. Heliographical Positions and Areas of Sun-spots observed with the Kew Photoheliograph during the years 1862 and 1863." By WARREN DE LA RUE, Ph.D., F.R.S., F.R.A.S., BALFOUR STEWART, LL.D., F.R.S., F.R.A.S. (Superintendent of the Kew Observatory), and BENJAMIN LOEWY, F.R.A.S. Received March 31, 1868.

(Abstract.)

In this paper the sun-pictures taken by the Kew photoheliograph for the years 1862 and 1863 are discussed; the heliographic latitude and longitude of every spot is given, and the area of each group on each day when it was observed is expressed in millionth parts of the sun's whole hemispherical area. The Kew photoheliograph itself, as well as the instrument invented by Mr. De la Rue for measuring sun-pictures, have been already described by Mr. De la Rue in the Bakerian Lecture for 1862. These descriptions are not therefore repeated in this paper; but, on the other hand, the method by which the heliographic position of spots is deduced from the measurements made is given at considerable length.

The results of succeeding years, and their final discussion with reference to the sun's elements, will be published hereafter.